

Gravatt, Dan

From: Schumacher, John <jschu@usgs.gov>
Sent: Thursday, August 15, 2013 7:29 AM
To: Gravatt, Dan
Subject: Re: West Lake groundwater data qualifiers

Dan,

I can probably arrange to get one of our contracts QA folks that reviews all of the rad data on line, if needed. Might save a couple of iterations.

On Thu, Aug 15, 2013 at 6:47 AM, Gravatt, Dan <Gravatt.Dan@epa.gov> wrote:

John, you raise good points below. I am copying Paul Rosasco and Victoria Warren on this e-mail so they can see your concerns. I think we'll need to have a conference call with Paul and Victoria to start with, and then follow up with your lab folks as appropriate.

Daniel R. Gravatt, PG

US EPA Region 7 SUPR/MOKS

11201 Renner Boulevard, Lenexa, KS 66219

Phone (913)-551-7324

Principles and integrity are expensive, but they are among the very few things worth having.

From: Schumacher, John [<mailto:jschu@usgs.gov>]
Sent: Tuesday, August 13, 2013 7:44 AM
To: Gravatt, Dan
Subject:

Dan,

One of the issues we are struggling with is the large amount of data qualifiers in the radiochemical data tables and just what criteria is used to determine if an analyte is "detected".

0714

40482991

3.0



Superfund

1- The April 2013 report text on page 5 under sensitivity indicates that results greater than the MDA but having a CSU less than 50% are qualified with a "J". The report does not indicate the specific definition of "MDA" in the data tables and it is not clear if this is a MDA or MDC as defined by MARLAP. In either case, the apparent use of the MDA in the data tables to indicate detection of an analyte seems to contradict MARLAP guidance.

A review of both U and radium values in the data tables indicates that the MDA is used to determine a detection. This is contradictory to MARLAP which the report says on p. 3 is followed.

In regards to a MDC or MDA, p 20-7 of MARLAP indicates that "Neither version of the MDC can legitimately be used as a threshold value for a detection decision. The definition of the MDC presupposes that an appropriate detection threshold (i.e., the critical value) has already been defined.

P 20-8 further indicates that if sample specific MDCs are reported, it must be clear that no measured value should ever be compared to an MDC to make a detection decision.

In the April 2013 West Lake landfill OU-1 report, it is obvious that both the radium and uranium data use the MDC to determine detection instead of using the critical level. In fact, the critical level or result is not even reported. This is not consistent with MARLAP yet the text indicates that MARLAP is followed. Why are critical levels not calculated and used.

2- There are other qualifiers in the data tables (many of them) that do not appear to be standard MARLAP. According to MARLAP.... -Volume 1 Section 8.3.3 page 8-9 Data Qualifiers

"The verification process uses a qualifier ("E") to alert the validator to noncompliance, including missing documentation, contract compliance, etc."

"The validation process uses the qualifiers listed below to identify data points that do not meet the project MQOs....

U A normal, not detected (< critical value) result

Q A reported combined standard uncertainty, which exceeds the project's required method uncertainty.

J An unusually uncertain or estimated result.

R A rejected result: the problems (quantitative or qualitative) are so severe that the data can not be used "

"During the data validation process the data validator may use additional qualifiers based on QC sample results and acceptance criteria...

S A result with a related spike result (laboratory control sample [LCS] matrix spike [MS] or matrix spike duplicate [MSD]) that is outside the control limit for recovery (%R); "S+" or "S-" used to indicate high or low recovery.

P A result with an associated replicate result that exceeds the control limit.

B A result with associated blank result, which is outside the control limit, "B+" or "B-" used to indicate high or low results.

3- I do not understand the application of the qualifiers. As an example, table 6 Ra results for sample PZ-113-AD DIS. Ra-228 value is more than 3x the MDA and the CSU is only 0.83, yet the value is flagged as a J+ and the Ra-226 result is not qualified, then the combined value is not qualified yet Ra-228 is indicated to be estimated and apparently bias high. It seems logical that if one part of a combined results is flagged, then the entire result is also flagged. The use of the J+ is not well understood in context of the MDA versus a sample specific critical level. I am the first to admit that the world of data validation and qualifiers is not my comfort zone. There are many questions regarding the various qualifiers and a thorough review of a complete radiochemical data package by our lab folks probably is in order.

--

John G. Schumacher
Chief, Hydrologic Investigations
U.S. Geological Survey
Missouri Water Science Center
1400 Independence Road
Rolla, MO 65401
573.308.3678 573.308.3645(fax)
email: jschu@usgs.gov

--

John G. Schumacher
Chief, Hydrologic Investigations
U.S. Geological Survey
Missouri Water Science Center
1400 Independence Road
Rolla, MO 65401
573.308.3678 573.308.3645(fax)
email: jschu@usgs.gov